

## **II. REMARKS**

### **A. Introductory Remarks**

Reconsideration of this application is earnestly requested. Claims 2-8, 10-12, 14, 15 and 22, 24-28 are pending in this application. Claims 9, 10, 23, and 24 are cancelled. Claims 3, 5, 6, 7, 8, 12, 14, 15, 22, 24, 25, 28 are amended for clarity and scope. No new matter has been added by this amendment.

### **B. Substance of Telephonic Interview**

Applicants thank Examiner Kin-Chan Chen for courtesies extended during the telephonic interview and discussions held on September 12, 2007. The following is Applicant's statement of the substance of those discussions.

Applicants discussed with the Examiner the nature of the rejections over Ueda, Wieserman, and Obanawa in the final Office Action mailed on June 20, 2007. In particular, Applicants argued that Ueda and Wieserman in combination neither taught a plurality of chelating particles nor a plurality of chelator compounds as recited in claim 14. Further, Applicants argued that Ueda, Wieserman and Obanawa in combination failed to teach a spacer between a particle body and chelator compounds attached by a covalent bond. Additionally, Applicants asserted that Wieserman and Obabnawa were not related art because these references were from the field of adsorbent materials for chromatographic separation and therefore did not pertain to the CMP field.

In response, the Examiner asserted that the preamble was not a limitation in determining the patentability of composition claims. Additionally, the Examiner suggested incorporating the limitations of some of the dependent claims to distinguish the spacer or the chelating compounds over the combination of Ueda and Wieserman. No agreement was reached during this telephonic interview.

### **C. Rejection of Claims 2-7, 9, 11, 12, and 14 Under 35 U.S.C. §112, Second Paragraph**

The Office Action rejected claims 2-7, 9, 11, 12, and 14 under 35 U.S.C. §112, second paragraph, as being indefinite. Specifically, the Office Action asserted that the recitations, “the chelating compounds” and “the chelator particle” were unclear. In light of the amendments made to independent claims 14 and 15, Applicants traverse this rejection for the following reasons.

Applicants have amended independent claims 14 by reciting “chelator compounds” and “particle” to differentiate the two different chemical entities so as to obviate any lingering confusion over the terms “chelator compounds” and “chelating particles” in claim 14. Accordingly, Applicants submit that amended claim 14 is definite and request withdrawal of this rejection.

**D. Rejection of Claims 2-5 and 14 Under 35 U.S.C. §103**

The Office Action rejected claims 2-5 and 14 as allegedly being obvious over U.S. Patent Application No. 2003/0017785 (“Ueda”) in view of U.S. Patent No. 4,904,634 (“Wieserman”). In light of the amendments to claim 14, Applicants respectfully traverse these rejections.

The Office Action admits that Ueda does not disclose “that the chelating compounds may be attached to the spacer, which is different that the chelating compounds and different that the particle.” The Office Action, however, asserts that it would have been obvious to use the spacer as disclosed by Wieserman in the composition of Ueda because Wieserman teaches using it for holding metal oxide particles apart. *See* Office Action p. 3-4.

**1. Combination of Ueda and Wieserman does not teach all elements of amended claim 14.**

Contrary to the assertion in the Office Action, Applicants respectfully submit that the combination of Ueda and Wieserman does not teach all elements of the invention of amended claim 14.

Ueda teaches a polishing composition comprising a chelate resin particle and an inorganic particle, wherein the chelate resin particle carries on the surface thereof a polydentate ligand having a plurality of coordinated atoms forming a complex with a metal. *See*, Ueda, paragraphs [0008] and [0012]. The chelate resin slurry is prepared by dry grinding and hammer milling a commercially available chelate resin having an iminodiacetate group obtained from Sumitomo Chemical Co. *See* Ueda paragraph [0060]. It is important to note that the iminodiacetate functional group on the surface of the chelate resin particle comes about due to grinding of the resin thereby exposing the iminodiacetate functional groups and is not added thereon by chemical methods. *See*, Ueda paragraph [0060] and paragraph [0012]. In contrast, amended claim 14 does not recite any chelate resin particle. Instead amended claim 14 has a *poviso* recitation that it does not include a phosphorous containing group as taught by Wieserman.

Wieserman addresses the problem of improved metal oxide adsorbents by surface bonding it with a monolayer of one or more phosphorous containing organic material. *See*, Wieserman at col. 2 lines 30-34. As shown in figure 8 of Wieserman, the organic material forms a monolayer on the surface of the metal oxide particles. The depicted phosphorous head is attached by a covalent bond to the metal oxide particle, whereas the polymer tail is free and is not attached to another metal oxide particle or chelator compounds. Wieserman does not teach that his “active material” be used as a spacer to hold a particle body and a chelator compounds apart. Rather, Wieserman defines an “active material” as:

“active material” is intended to define an organic molecule comprising a monomer, oligomer, or short chain polymer having a phosphorus-containing group, and preferably at the end of the molecule, capable of bonding to the metal oxide/hydroxide support and having one or more sites thereon, preferably at the opposite end of the molecule, which may be used for the coupling, bonding, or adsorbing, etc. of atoms, ions or other molecules thereto, e.g., when the active material functions as an adsorbent, the active material will have sites available on the molecule to which the material to be adsorbed will be attracted. *See*, Wieserman col. 4, lines 37-48.

From reading this definition of an active material, it would be clear to one of skill in the art that Wieserman teaches an active material comprising a phosphorus-containing group with a short chain polymer having a site at the end to adsorb atoms. Wieserman is

limited to the use of phosphorus-containing organic materials for bonding to a metal oxide surface, presumably given the observed superior adsorbent properties of the product. In contrast, the chelator compounds recited in Applicants' claims as amended do not include phosphorus-containing functional groups. Thus, a person of ordinary skill in this art would find no motivation from a reading of Wieserman to employ organic compounds containing anything other than phosphorus functional groups.

As such, Applicants contend that the combination of Ueda and Wieserman fails to teach or suggest at the very least Applicants' claimed plurality of particles that are insoluble in the diluent; wherein on the surfaces of a portion of said particles, a plurality of chelator compounds are attached through spacers that are different from the particles and the chelator compounds and that are covalently bound to the surfaces of said particles; and wherein said chelator compounds do not include phosphorus-containing functional groups. Unlike Ueda, amended claim 14 does not recite chelate resin particles. Further, Ueda and Wieserman do not teach a plurality of chelator particles or plurality of chelator compounds. Neither Ueda nor Wieserman, either alone or in combination, teaches or suggests all of these features of Applicants' claimed invention. Accordingly, Applicants believe that this rejection should be withdrawn.

## **2. No Motivation or Suggestion in Wieserman and Ueda**

Further, contrary to the assertion in the Office Action that it would have been obvious to one of ordinary skill in the art to use the spacer as disclosed by Wieserman in the composition of Ueda because Wieserman teaches using it for holding metal oxide particles apart, Applicants submit that Wieserman does not provide any motivation to modify or combine his teachings in view of Ueda's disclosure for a number of reasons. First, the spacer in Applicant's claim 14 does not function to hold metal oxide particles apart as suggested by Wieserman because claim 14 defines a spacer being disposed between the particle and the chelator compounds, which is not structurally or functionally the same entity as Wieserman's "active material". Therefore, Wieserman does not teach or suggest a spacer between a particle body and chelating compounds as recited in claim 14.

Further, the chelator compounds as recited in Applicants' claim 14 as amended do not include any phosphorus-containing functional groups. Further, the spacer as recited in claim 14 of Applicants' invention is disposed between a particle (such as a metal oxide abrasive) and the chelator compounds, and not between two metal oxide particles as suggested by Wieserman. Therefore, Wieserman cannot be relied upon for teaching or suggesting a spacer between a particle and chelating compounds.

Moreover, the Office Action implies that one of ordinary skill in the art would look elsewhere for a spacer to hold chelating compounds and chelate resin particles apart in Ueda's composition. By turning to Wieserman, the Office Action is asserting that there is a need or desirability for such a spacer in Ueda's described composition. There is no reason why a person of skill in the art would desire to place a spacer. Such showing of the need and desirability is absent here. Ueda teaches polishing slurry comprising a chelate resin particle with functional groups and an inorganic particle that can polish metals at high speed. Although Ueda's resin particles have ligands on the surface of the chelate resin particles, these come about due to milling and polishing of the particles. *See* Ueda paragraph [0012]. Thus, the hindsight based reconstruction in the Office Action ignores Ueda's teaching of using a slurry comprising chelate resin particles without a spacer linking the particle body and contends that it would be obvious to one of skill in the art to merely add a spacer between the inorganic particle and the chelate resin particle. In contrast, Ueda teaches that the metal can be polished at high speed even without the need or desirability for a spacer to hold the chelate resin particles and the inorganic particles together. In contrast to Ueda, Applicants do not recite a chelate resin particle. Applicants point out that the prior art can be modified as *prima facie* obvious as long as there is a reasonable expectation of success. *In re Merck & Co., Inc.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Therefore, absent a reasonable expectation of success based on using Wieserman's "active material" in Ueda's composition, the invention of claim 14 cannot be held obvious in view of the references.

Therefore, in light of the foregoing discussion, Applicants respectfully submit that an obviousness rejection based on Ueda and Wieserman cannot be maintained and thus should be withdrawn.

**C. Rejection of Claims 6, 7, 9, 11, 12, 15, and 22-28 Under 35 U.S.C. §103**

The Office Action rejected claims 6, 7, 9-12, 15, and 22-28 as allegedly obvious over Ueda in view of Wieserman and further in view of U.S. Patent No. 4,732,887 ("Obanawa"). Specifically, with respect to claims 6, 7, 9-12, 15, and 22-23 and 25-28, the Office Action asserts that it would have been obvious to one with ordinary skill in the art to modify the combined Ueda and Wieserman teachings by using the composite chelating particles as taught by Obanawa in order to efficiently chelate (or adsorb) the metallic residues. *See* Office Action on pages 4-5. Applicants respectfully traverse these rejections.

As indicated by the foregoing, Applicants consider independent claim 14 to define subject matter that is novel and unobvious patentable over Ueda and Wieserman, either alone or in combination. The same conclusion, therefore, applies with respect to the dependent claims 6, 7, 9-12, which incorporate all of the features of claim 14. Therefore, on this basis alone, Applicants request withdrawal of this rejection as to these claims.

**1. Claim 15 and 24**

Additionally, Applicants submit that Obanawa teaches particulate inorganic porous material, and contained in the pores thereof, an organic resin having a micro-void. *See* Abstract. Such composite porous material displays high mechanical strength and exhibit high adsorbing and separating capacity comparable to those of the conventional porous resins. *See* Obanawa col. 2, lines 59-63. Unlike Applicant's amended independent claims 14, 15 and 24, Obanawa teaches that the organic resin may be present on the outer surface of the inorganic porous material. However, these organic resin particles are not held by a spacer between the particles and the chelating compounds and they are not held to the pores by a covalent chemical bond. It is well known to those skilled in the art that a covalent bond such as between C-N, C-O, C-C has a high thermodynamic bond dissociation energy in the order of 100 kJ/mol. Thus, covalent bonds are different from ionic or Van der Waals bonds at least because of their differing bond dissociation energies.

Obanawa does not teach a covalently bound chelate resin particle with the inorganic porous material. What Obanawa teaches is that the organic chelate resin particles fill the void or the pores of the inorganic porous material to be used as an adsorbent and packing material for gas or liquid chromatography. No bond whatsoever exists between the chelate resin particle and the micro-void of the inorganic material. *See*, Obanawa abstract.

Further, Applicants submits that the independent claims 15 define subject matter that is both novel and unobvious over the combination of Ueda, Wieserman, and Obanawa because the references either alone or in combination do not teach or suggest all the features of independent claims 15. Specifically, with respect to claims 15 and 24, the references fail to teach a plurality of particles that are insoluble in water; wherein on the surfaces of a portion of said particles, a plurality of chelator compounds are attached through spacers that are different from the particles and the chelator compounds that are covalently bound to the surfaces of said particles; and wherein the chelator compounds contain pendant functional groups attached thereto, said functional groups selected from the group consisting of hydroxyls, carboxylic acids, amines, amides, imines, imides, mercaptans, sulfonic acids, hydroxamic acids, carbonyl groups, esters, ethers, ureas, cyano groups, nitro groups, carbonates, inorganic salts thereof, or a combination thereof, and wherein at least a portion of the functional groups are no further than about 7Å from another functional group. Applicants also point out that amended claim 15 does not recite phosphonic or phosphonates as a chelating molecules.

Applicants respectfully submit that claim 15 defines subject matter that is novel and unobvious over Ueda, Wieserman, and Obanawa. Accordingly, Applicants requests withdrawal of the obviousness rejection as to these claims and to the corresponding dependent claims that depend therefrom.

## **2. Claims 6 and 15**

With respect to claims 6 and 15, the Office Action asserts that since the compound is used as a chelating agent, it is expected that the distance between two functional groups are adjusted so as to efficiently chelate the metallic residues depending on the product

requirement and therefore it is merely a matter of choice of design depending on the product requirement.

In response, Applicants submit that the routine experimentation could not be used to optimize the chelating efficiency because the prior art references of Ueda, Wieserman, and Obanawa alone or in combination do not teach or suggest this particular recitation of “wherein at least a portion of the functional groups are no further than about 7Å from another functional group.” This is a narrow recitation and absent a reason why one of ordinary skill in the art would select this particular embodiment based on Ueda, Wieserman, and Obanawa, the invention of dependent claim 6 and 15 cannot be held obvious.

Applicants submit that the fact that a claimed product is within a broad field of prior art and one might arrive at it by selecting specific items and conditions, does not render the product obvious in the absence of some directions or reasons in the prior art for making such selections. (Ex Parte Kuhn, 132 U.S.P.Q. 359 (1961)). Prior art references in combination do not make an invention obvious unless something in the prior art references would suggest the advantage to be derived from their combined teachings. In re Sernaker, 217 U.S.P.Q. 1, 6 (Fed. Cir. 1983). One simply cannot pick and choose among individual parts of assorted references to form a mosaic to recreate a facsimile of the claimed invention. AKZO N.V. v. International Trade Commission, 1 USPQ.2d 1241, 1246 (Fed. Cir 1986). Uniroyal v. Rudkin-Wiley, 5 USPQ. 2d 1434, 1438 (Fed. Cir. 1988). Applicants respectfully submit that claims 6 and 15 specifically define a length of the spacer that is not taught or suggested by the prior art. Accordingly, Applicants request withdrawal of the rejection as to claims 6 and 15.

In view of the above reasoning, Applicants respectfully submit that the same conclusion applies to claims 11, 22, 25, 27 and 28 as these claims depend from independent amended claims 14 and 15, which are considered allowable.

### 3. Claim 22

With respect to dependent claim 22, the Office Action asserts that the Examiner takes notice that dependent claim 22 differs from the combined prior art by specifying well-known features (such as chelating compound having at least three sulfonic acid groups) to the art of polishing and wet



etching. Further, the Office Action asserts that it is the Examiner's position that a person having ordinary skill in the art at the time of the claimed invention would have found it obvious to modify the combined prior art by adding any of same or well-known features to same in order to efficiently chelate the metallic residues with a reasonable expectation of success. *See* Office Action, p. 7.

In response, Applicants submit that the prior art references do not teach, suggest, or provide the motivation to modify the teachings therein to arrive at the invention of claim 22. Claim 22 depends from claim 15 and incorporates all the features of claim 15. As discussed *supra*, the features of claim 15 is not taught or suggested in the prior art references. Further, with respect to dependent claim 22, there is no reasonable expectation of success for one of ordinary skill in the art to choose *at least three sulfonic acid groups* as functional groups and attach a spacer between the chelating particles and the chelator compounds by a covalent chemical bond. Such inventive insight is only possible with the benefit of hindsight provided by Applicants' own disclosure. Accordingly, Applicants submit that dependent claim 22 is allowable and requests withdrawal of this rejection.

**D. Conclusion**

Since amended claims 14, 15, and 24 define subject matter that is non-obvious over Ueda, Wieserman, and Obanawa cited in the Office Action and there is no motivation or suggestion to modify any of the references, the obviousness rejections are overcome. Accordingly, Applicants request reconsideration and allowance of independent claim 14, 15, and 24 including the dependent claims that depend therefrom, as these dependent claims incorporate all the features of the independent claims.

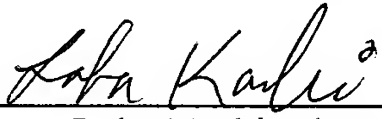
**E. Request for Allowance**

In view of the amendments and arguments presented above, all claims are now thought to be in condition for allowance, an indication of which is solicited. In the event that any issues remain outstanding, Applicants would appreciate the courtesy of a telephone call to the undersigned to resolve such issues in an expeditious manner so as to place this application in condition for allowance.

No additional fees are believed necessary. In the event other fees are necessary, the Commissioner is hereby authorized to charge such fees, or credits, to Morgan, Lewis & Bockius Deposit Account no. 50-0310.

Respectfully submitted,

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